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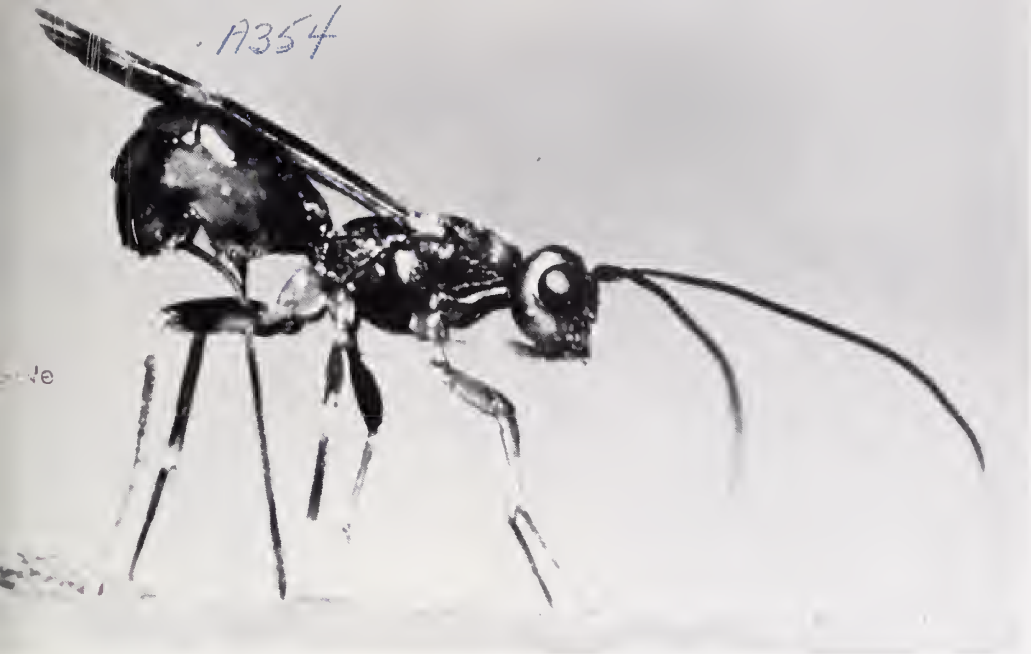

FORESTRY SCIENCE PHOTO STORY

PHOTO STORY No. 2

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PROTECTOR OF ELMS ???

A minute insect, no bigger than a gnat, may be just what the 'doctor ordered' in controlling Dutch Elm Disease, killer of America's native elms.

Elms, almost as much a part of Americana as 'apple pie and the 4th of July,' appear to be going the way of the American chestnut, to extinction. Dutch Elm Disease, if left unchecked, promises to destroy one of America's most cherished shade trees.

Already the disease, discovered less than 40 years ago in this country, destroys over 400,000 elms a year.

Carried by a minute beetle, the disease attacks the circulatory system of the elm, literally strangling the tree to death. Up until now, DDT has been the best known control agent. But DDT leaves a residue which can be harmful to man and his environment.

So a search has been underway to come up with an effective control agent but one which is less toxic to man. Forestry Scientists at the Forest Service's Delaware, Ohio, laboratory are looking at a wasplike insect, imported from France as one possible control agent to limit the spread of the disease until a cure can be found.

The scientists are studying the tiny insect with great interest. They know its effectiveness in Europe for controlling the spread of the disease. But, they are looking closer at the 'import' because it has certain characteristics which may limit its success in this country.

(cont. on next page)

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NORTHEASTERN FOREST EXPERIMENT STATION UPPER DARBY, PENNSYLVANIA 19082

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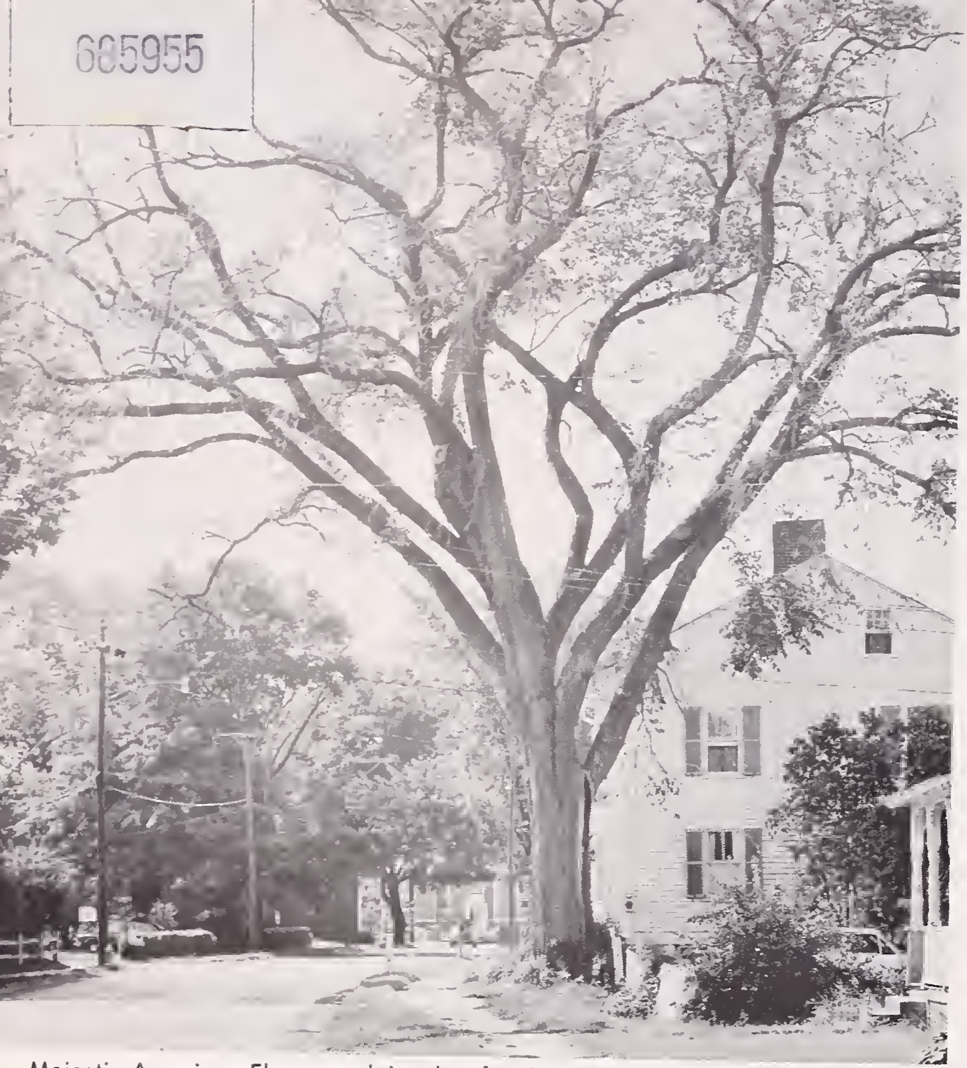

Majestic American Elms are dying by the thousands as a result of the Dutch Elm Disease. Forestry scientists of Delaware, Ohio, are looking toward parasites as control agents which may arrest the spread of this disease.

For one thing, the insect is most effective on elms which have smooth thin bark. The insect is not as effective on elm wood where the bark is thick and deeply furrowed as in the lower and older parts of a tree.

Also, this little imported parasite comes from southern France where the winters are much milder than those found in midwestern United States. The forestry scientists are 'looking' into how the parasite lives in our colder climate.

Small quantities of the insect have been successfully overwintered out-of-doors in several midwestern states. Still, the scientists feel that this aspect of its biology may still pose a problem in areas where the winter climate is more severe.

The forestry scientists are also searching for answers to why the elm bark beetle only selects and feeds on elms. With a knowledge of the host-plant chemicals responsible for this selectivity, it may be possible to develop new or improve old methods for controlling the spread of the disease.

Insect and disease research at the Forest Service's Delaware, Ohio laboratory is hardwood oriented. Besides concern for the elm, experiments are directed toward control of these pests which kill, degrade and depress growth of other prime hardwoods such as walnut, cherry, oak, and yellow poplar, that flourish in the Central and Eastern states.

Forestry scientist check
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parasites which attack t

Rearing in the

Adult parasite
into infestation
Beetle larvae.
Beetle's larva.

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Bolts of elm with Elm Bark Beetle larvae infested with the parasite, Dendrosoter protuberans, are transferred to cylindrical emergence cartons for adult parasite emergence. (2205 H9)

Research Entomologists, Dr. Charles A. Lincoln (right) and Bruce H. Kennedy, count the numbers of male and female adult parasites in a test tube. (2205 H13)

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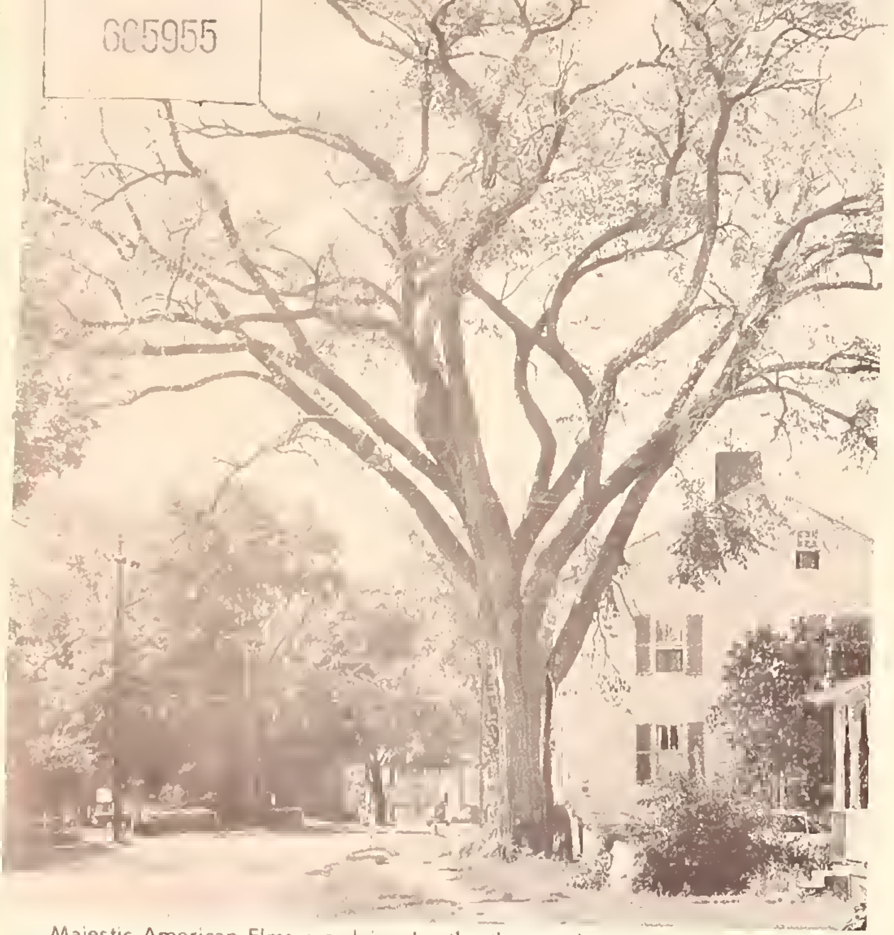

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Forestry scientist checks bolts to see if they have been attacked by Elm Bark Be Infected bolts are used to rear parasites which attack th tle's larva. (2205 H7)

Rearing in the Lo ratory

Adult parasites, ollected in France, are introduced into infestation x containing bolts of elm with Bark Beetle larvae. T parasites lay their eggs next to the Beetle's larva. (05 H8)

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THE NORTHEASTERN FOREST EXPERIMENT STATION, a regional research branch of the U. S. Forest Service, has forestry research responsibilities in 14 states, with a third of America's population and 18 percent of the total commercial forest area. The Forest Service has served the varied forestry research needs of this region since 1923.

The Northeastern Forest Experiment Station is the only Forest Service research station conducting studies on maple sap production, eradication and control of oak wilt and dutch elm disease, and restoration of surface-mined lands. The Station's pioneer research project on discoloration and decay in wood is likewise unique among Forest Service research units.

The Station also does research in recreation, forest economics, wildlife, and forest engineering. Its survey unit provides data to forest-related industries. The Station's forest insect research program aims at making better use of biotic factors in controlling destructive insects. Research conducted by the Station on water yield from forested watersheds supplies vital information to managers of municipal water supplies in the Northeast.

Forest products scientists, cooperating with private industry, devised a promising system for installing wooden posts for highway guardrails. Use of this system could expand the demand for wood, while reducing road construction costs. Forestry scientists also assisted in developing an economical floor-levelling system to aid housing renewal projects in New York City. And Station researchers also developed an even-aged management system for mixed oaks and associated hardwoods. This system is now in use on National Forests and most state forests in the East, as well as by many private industries.